REMARKS

Claims 1-29 and 70-81 are pending. Claims 4, 18, 24-29 and 70 have been amended. Support for the amendments to the claims can be found throughout the application as originally filed. No new matter has been added.

In addition, the amendment to the specification is of material that was incorporated by reference. No new matter has been added.

Rejection of Claims 1-2, 4-14, 18-29, 70-77 and 79-81 Under 35 U.S.C. §112, first paragraph

Claims 1-2, 5-14, 74-77 and 79 are rejected under 35 U.S.C. §112, first paragraph, "as failing to comply with the written description requirement." Specifically, the Examiner asserts that "there is no literal support for using framework regions of the original germline nor is there support for using 'different' framework regions."

Applicants respectfully traverse this rejection. Contrary to the Examiner's assertions, Applicants have described the amino acid sequences in their "germline framework". For example, page 4, lines 20-22 of the application describes the amino acids sequences in their germline framework by disclosing "MUC-1 binding members comprising a V_H region ... from the DP47 V_H germ line and/or a V_L region ... from the DPK15 germ line." In addition, at page 23, lines 15-20, the application provides that "an analysis of the PH1 Fab antibody revealed that the heavy chain variable (V_H) regions is a V_H region of the DP47 human germ line and that the light chain variable (V_L) region is a V_L region of the human DPK15 human germ line." The application goes on to state that "the invention also provides MUC1-specific binding members comprising a MUC1-specific binding domain ..., or portion thereof (e.g., one or more CDRs), which is encoded on a polynucleotide sequence ... from the DP47 and/or DPK15 human germ lines." Thus, Applicants have clearly provided sufficient description of the claimed amino acid sequences in their "germline framework" to show they were in possession of the claimed invention at the time of filing.

In addition, Applicants have described the amino acid sequences in "different framework regions". For example, at lines 23-25, the application states that "the invention provides MUC1-specific binding members formed by inserting one or more of the CDRs described herein into the framework regions (FRs) of antigen binding domains from other germ lines or from other antibodies." See also, page 11, lines 25-28 which provides that sequences encoding one or more of the disclosed CDRs can be provided "in frame with another DNA sequence, such as a nucleotide sequence encoding ... framework (FR) regions of a different immunoglobulin" and page 14, lines 26-30 which provides "using recombinant DNA techniques, it is possible to construct DNA molecules that code for each variable region or domain (V_L, V_H), or even portions of a variable region, such as individual CDRs ...which in turn may be inserted into a gene coding for a different antibody or other protein ...." Lastly, at page 23, lines 21-24, Applicants provide that "one or more CDRs described herein may be inserted into the FRs from other known germ lines or other cloned antibody domains ... to produce additional forms of MUC1-specific antibody molecules." Thus, Applicants have clearly provided sufficient description of the claimed amino acid sequences in "different framework regions" to demonstrate that they were in possession of the claimed invention at the time of filing.

For the reasons discussed above, Applicants respectfully request that the Examiner withdraw this rejection.

Claims 4-7, 18-29, 70-73 and 79-81 are rejected under 35 U.S.C. §112, first paragraph, as lacking written description. In particular, the Examiner asserts that

> Although there are limited substitutions that could be made within the amino acid sequence claimed, such substitutions have not been clearly taught for all of the claimed sequences. Without the proper identification of all the possible mutations or substitutions claimed, the specification has not provided the skilled artisan with the proper written description of the entire genus claimed ...substitutions for all other sequences claimed have not been fully delineated and have not been associated with specific sequences and such no representative core structure can be found that is representative of all substitutions made. ... There are many epitopes found within the MUC-1 protein and because a nexus between the binding members structure has not been correlated with a particular function, one

> of skill in the art would not be able to determine if the applicant was in possession of all possible binding members claimed.

Applicants respectfully traverse this rejection. However, in the interest of expediting prosecution, the claims have been amended to indicate that MUC1-specific binding members include amino acids having high homology or conservative substitutions to amino acids 99-110 of SEQ ID NO:3 only. As indicated by the Examiner, "the substitutions taught on page 56 may be enough to represent the genus of substitutions" for amino acids 99-110 of SEQ ID NO:3. Accordingly, the amendments to the claims obviate this rejection.

Claims 15-17, 74 and 77 are rejected "as containing subject matter which was not described in the specification is such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention." Specifically, the Examiner asserts that

> reference to Genebank data cannot be relied on for patent purposes because such databases are constantly being updated and as such a skilled artisan may not have access to the exact sequence being claimed ... Applicant is required to amend the disclosure to include the material incorporated by reference ... Applicant is reminded to provide a Sequence Listing ... [and] to provide the appropriate Hawkins Declaration to accompany amending the instant specification to provide essential subject matter defining the claimed "germ line" amino acid sequence.

Without conceding the issue, the sequences of DP47 and DPK15 have been incorporated into the specification. A revised sequence listing and an In re Hawkins declaration are being filed herewith. In view of the foregoing, Applicants respectfully request that the Examiner withdraw this rejection.

Rejection of Claims 4-8 and 18-29 Under 35 U.S.C. §102(b)

Claims 4-8 and 18-29 are rejected under 35 U.S.C. §102(b) "as being anticipated by Arathoon et al." In particular, the Examiner asserts that "because the claims are interpreted as open ended because of the 'comprising' language and because the sequence found in Arathoon et

al is identical to that of amino acids 55-66 of SEQ ID No: 3, the claims are still anticipated by that of Arathoon et al, irregardless of the fact that Arathoon et al does not specifically teach the exact sequence of 55-66 of SEQ ID No:3."

Applicants respectfully traverse this rejection. Claims 4 through 8, as amended, are directed to a MUC1-specific binding member that binds MUC1 and includes a specified amino acid sequence in its germline framework or in the framework from a different polypeptide. Claims 18-29 are directed to MUC1-specific binding members that have a high level of homology with specific amino acid sequences.

Arathoon et al. disclose a bispecific antibody that binds Ob-R and Her3 having a specified sequence --a small portion of which includes amino acid residues 31-35 of SEQ ID NO:3. As provided previously, Arathoon et al. disclose an antibody that binds only Ob-R and Her3. Arathoon et al. do not teach or suggest a MUC1-specific binding member that has amino acids 31-35 of SEQ ID NO:3 in its germline sequence or in a different amino acid sequence. Therefore, Arathoon et al. do not teach or suggest every element of claims 4-8.

Claims 18-29 require that the MUC1-specific binding member include an amino acid sequence that is not disclosed by Arathoon et al. Therefore, Arathoon et al. do not teach or suugest every element of claims 18-29.

For the reasons discussed above, Arathoon et al. do not anticipate the claimed invention, and thus, Applicants respectfully request that the Examiner withdraw this rejection.

Claims 4, 8 and 18-29 are further rejected under 35 U.S.C. §102(b) "as being anticipated by Kanappik A et al." The Examiner assets that "the claims are interpreted as being open because of the comprising language and as such the sequence that is found in amino acids 31-35 of SEQ ID NO:3 is comprised within the larger sequence. Because the sequence of Kanappik et al are identical to those of the instantly claimed invention, they are, in the absence of evidence to the contrary, MUC-1 binding members."

Applicants respectfully traverse this rejection. As provided above, claims 4 through 8, as amended, are directed to a MUC1-specific binding member that binds MUC1 and includes a

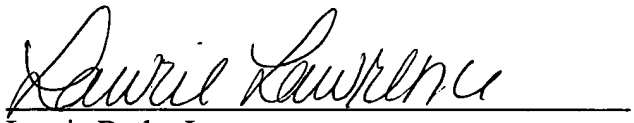
specified amino acid sequence in its germline framework or in the framework from a different polypeptide. Claims 18-29, as amended, are directed to MUC1-specific binding members that have a high level of homology with specific amino acid sequences.

Contrary to the Examiner's assertions, Kanappik et al. do not disclose a sequence identical to residues 31-35 of SEQ ID NO:3. This sequence is simply not disclosed in that reference. Moreover, Kanappik et al. do not teach or suggest any of the other sequences recited in the claims. Thus, Kanappik et al. do not teach or suggest an amino acid sequence that binds MUC1 as currently claimed and, therefore do not teach or suggest every element of the claimed invention. Applicants respectfully request that the Examiner withdraw this rejection.

Enclosed is a check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: May 3, 2004



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